



**PERT
EMPLOYERS GUIDE
TO THE TECHNICAL TOOLKIT**

Version History

| Version | Description of Changes |
|---------|--|
| V1.0 | Initial Draft |
| V1.1 | Revised |
| V1.2 | Initial Release of document |
| V1.3 | Revised to include validation files, CalPERS ID File Exchange Layout, updated payroll file, schema and mdi with Division's CalPERS ID and updated enrollment file and schema with Retirement System field added; added change log to track release date of files. |
| V3 | <ul style="list-style-type: none"> Updated the version of this user guide to coincide with the release of Version 3 of the Technical Toolkit. Made slight change to font formatting in Glossary (1.3) Added note to Table 3.0 indicating the SampleHealthEnrollment.xml was not ready for the version 3 release of the Technical Toolkit. |
| V4 | <ul style="list-style-type: none"> Updated to include information on new TT components (State Retirement Enrollment File and State Retirement Enrollment Validations). |
| V5 | Updated Table 3.0 (Contents of Toolkit) to include Schema Documents. |
| V6 | Added link to Tools Available on the Internet |

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1. INTRODUCTION

The Technical Toolkit is intended to provide External Business Partners who are developing a solution to utilize File Upload or File Transfer Protocol (FTP) to report health enrollments, retirement enrollments or payroll contributions (including SIP contributions) to my|CalPERS.

1.1. Objectives

The objectives of this Technical Toolkit are these:

- Identify the elements included in the toolkit
- Explain the purpose of the elements included in the toolkit
- Define the relationships between the elements of the toolkit
- Provide developers with the specifications for the data elements and file formats
- Offer references to Uniform Resource Locators (URLs) for Microsoft and other sites where XML, XSD and related information can be found

1.2. Document Scope

The Technical Toolkit covers the following scope:

- Instructions on how to download and extract the contents of the Technical Toolkit
- Documentation on the Data Elements included in the health enrollment, retirement enrollment and payroll contribution files
- Documentation on the Data Elements included in the response files for FTP reporters
- Schema definitions for the health enrollment, retirement enrollment and payroll contribution files
- Schema definitions for the SOAP envelope and Common Utilities
- Examples of XML files for health enrollment, retirement enrollment and payroll contribution
- Documentation defining the hierarchy of the payroll file
- Information on Technical Support

1.3. Glossary

Data Element Descriptions – A table identifying the list of data elements that are included in a particular reporting file submitted by an Employer. The Data Element Description provides the name of the data element, whether it is required, conditional or optional to be included in the file, the level of the hierarchy within the file where the data element fits, the type of data and any valid values or particular format that needs to be used when reporting the data. **IMPORTANT:** The Data Element Definitions DO NOT describe the file structure. Please refer to the appropriate XSDs (XML Schema Definition), contained in the Technical Toolkit, for file structure specifications.

Encryption- Cryptographic transformation of data (called "plaintext") into a form (called "ciphertext") that conceals the data's original meaning to prevent it from being known or used. If the transformation is reversible, the corresponding reversal process is called "decryption", which is a transformation that restores encrypted data to its original state.

Extensible Markup Language (XML)- XML is a simple, very flexible text format derived from SGML (ISO 8879). Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

File Transfer Protocol (FTP) - A TCP/IP protocol specifying the transfer of text or binary files across the network.

HyperText Transfer Protocol (HTTP) - The protocol in the Internet Protocol (IP) family used to transport hypertext documents across an internet.

HyperText Transfer Protocol/Secure (HTTPS) – When used in the first part of a URL (the part that precedes the colon and specifies an access scheme or protocol), this term specifies the use of HTTP enhanced by a security mechanism, which is usually SSL.

Public Key – The publicly-disclosed component of a pair of cryptographic keys used for asymmetric cryptography

Response File – The file returned to External Business Partners that indicates the success or failure of the transactions submitted to CalPERS via File Transfer Protocol (FTP)

Sample XML – A file containing an example of XML for a particular reporting file to demonstrate the XML content and format of the file

Secure File Transfer Protocol (SFTP) – A communications protocol used to transfer files without compromise of data. Secure FTP provides extra security by encrypting the files before transmission. It encrypts both the commands and the data, preventing passwords and sensitive information from being transmitted in clear text over the network.

Simple Object Access Protocol (SOAP)- The formal set of conventions governing the format and processing rules of a SOAP message. These conventions include the

interactions among SOAP nodes generating and accepting SOAP messages for the purpose of exchanging information along a SOAP message path.

Validation File – A file specific to a given transaction set describing the error codes and error messages that are generated for each data element validation performed.

Web Service- A software system designed to support interoperable machine-to-machine interaction over a network.

XML Schema- A schema is a way to describe and validate data in an XML environment. A schema is a model for describing the structure of information. XML Schema (XSD) is a recommendation of the W3C.

2. INSTRUCTIONS FOR DOWNLOAD

The [Technical Toolkit](#) is available in the PERT area of CalPERS On-Line. Clicking on the link embedded in “Technical Toolkit” above will take you directly to the page where you can download the Toolkit.

The Technical Toolkit consists of several documents necessary for building XML files to report health, membership and payroll to CalPERS. For ease of downloading and to preserve the format of the schema files during download, the contents of the Technical Toolkit are contained in a Zip file.

Instructions for downloading the Zip file are on the page where the Zip file resides. The WinZip program is required to extract the contents from the file. WinZip is a file compression utility that allows several files to be compressed and contained within a single file. WinZip can be obtained online at [WinZip's Web Page](#).

Once the documents have been downloaded and extracted, the Technical Team responsible for building the XML files for reporting to CalPERS will use them to define, build and validate the XML.

Depending on the nature of the reporting relationship you have with CalPERS, you will use either a subset of the files in the Zip file or all of them. The next section indicates which files are related to the different files being reported.

3. TOOLKIT CONTENTS

The following table outlines the content of the Technical Toolkit and identifies which files included in the toolkit are relevant to Employers based on their contracting relationship with CalPERS.

| Content Changes in Employer Technical Toolkit - Release 5 | | | | | |
|---|-----------------------------|--------------------------|----------|-------------|---|
| Component Name | Health & Membership (State) | Health & Membership Only | SIP Only | Health Only | |
| Payroll | | | | | |
| Payroll Contribution File.pdf | X | X | X | X | |
| PayrollRetirement.xsd | X | X | X | X | |
| Payroll Response File.pdf | X | X | X | X | |
| PayrollReportResponse.xsd | X | X | X | X | |
| Payroll Validations.pdf | X | X | X | X | |
| PayrollRetirement_Page_1.mdi & pdf | X | X | X | X | |
| PayrollRetirement_Page_2.mdi & pdf | X | X | X | X | |
| PayrollRetirement_Page_3.mdi & pdf | X | X | X | X | |
| Schema documentation for PayrollRetirementV1.pdf | X | X | X | X | |
| SamplePayroll.xml | X | X | X | X | |
| Health and Retirement Enrollment | | | | | |
| Health Enrollment File.pdf | | X | | | X |
| Health Enrollment Response File.pdf | | X | | | X |
| Health Enrollment Validations.pdf | | X | | | X |
| Retirement Enrollment File.pdf | | X | X | | |
| Retirement Enrollment Response File.pdf | | X | X | | |
| Retirement Enrollment Validations.pdf | | X | X | | |
| State - Health Enrollment File.pdf | X | | | | |
| State - Health Enrollment Response File.pdf | X | | | | |
| State - Health Enrollment Validations.pdf | X | | | | |
| State - Retirement Enrollment File.pdf | X | | | | |
| State - Retirement Response File.pdf | X | | | | |
| State - Retirement Enrollment Validations.pdf | X | | | | |
| XSD and Sample XML | | | | | |
| Schema documentation for RetirementHealthTransactionsV1.pdf | X | X | X | | X |
| RetirementHealthTransactionsV1.xsd | X | X | X | | X |
| RetirementHealthResponseV1.xsd | X | X | X | | X |
| *SampleHealthEnrollment.xml | X | X | | | X |
| Sample Retirement Enrollment_v2.xml | X | X | X | | X |
| Utilities | | | | | |
| CommonUtilities.xsd | X | X | X | X | X |
| SoapEnvelope.xsd | X | X | X | X | X |
| Encryption Decryption Requirements.pdf | X | X | X | X | X |

| | | | | | |
|--|---|---|---|---|---|
| Overview of Documents.pdf | X | X | X | X | X |
| README - Technical Toolkit.txt | X | X | X | X | X |
| CalPERS ID Conversion | | | | | |
| CalPERS ID File Exchange for Employers.pdf | X | X | X | X | X |

Table 3.0

** The SampleHealthEnrollment.xml was not ready in time for Release 5 of the Technical Toolkit and will be made available as soon as it becomes available.*

When extracting the files from the Zip file, only the files shown under the column matching the contracting relationship you have with CalPERS will need to be extracted. [Table 3.4](#) indicates the name of the Schema files that match each of the XML files being reported. The next sections describe the documents contained in the Toolkit.

3.1. Reporting and Response File Data Element Descriptions

The Data Element Description artifacts are documents that define the Data Element names, descriptions, position in the file hierarchy, type, length and usage. Each element in each file is numbered for reference and elements that are logically related are grouped together. These documents do not represent the order or relationship of Data Elements within these files.

FTP reporters will receive a response file from CalPERS indicating the success or failure of each submitted transaction. The formats for these files detail the data elements included, the requirements for inclusion and the element definitions.

Each Data Element Description artifact begins with an introduction. The introduction describes the purpose of the document, provides definitions of the data contained within and an outline of the file hierarchy. Also included are Web sites where further information can be found on XML, SOAP and related technologies.

The Data Element Name column provides the formal name of the element. The description defines the element, provides an explanation of its use and notes under what conditions the data element is required where appropriate.

The column R/C/O indicates if the element is Required, Conditional or Optional. The Data Hierarchy indicates the level within the schema where the element is structured. The data type, field values and max length provide the format rules for the element.

The Data Hierarchy Column indicates the level of the hierarchy in the file where the Data Element resides.

The Data Type column indicates the type of data that is permitted in the Data Element.

The Field Values column lists the valid field values or format allowed in the Data Element.

The Max Length column lists the maximum number of characters that the Data Element can contain.

3.2. Reporting and Response File Schemas

For FTP and File Upload reporting, the XML files will require conformance to the schemas which define the structure of each file. The following table describes the relationship between the files provided, their schemas and the definition of each file/schema combination.

After processing a file submitted to CalPERS via FTP, CalPERS will generate a response file. The response files CalPERS sends to Employers will be in XML format. The schema for that XML format is included so that the Employer can build a process to retrieve and process the response file.

The Schema file names and the files they correspond with are shown in [Table 3.4](#) below. There is also schema documentation which provides details of the format and structure and a graphical overview of the XML files and the Schema relationships shown in [Appendix 5.3](#).

3.3. Payroll, Health, Health State, Retirement and Retirement State Validations Files

The validation files associated with each of the reporting files provides information about errors that might be generated during processing of the records in the file. For each element, the validation document will provide a description of the validation being performed on the data element, the error code, error severity and error message that is generated when that validation on the individual data element fails.

3.4. Common Utilities Schema

The Common Utilities Schema is common across all files transmitted to CalPERS using FTP or File Upload. This Schema file defines all the common types that are found across all the XML files and their respective Schemas. This Schema defines the rules that indicate what kind of data can be contained in a common data element, the data model relationship of the common data elements and the format that the data needs to comply with.

3.5. SOAP Envelope Schema

The SOAP Envelope schema is common across all files transmitted to CalPERS using FTP or File Upload. This Schema files describes the attributes of the XML files. Table 3.4 below indicates the relationship between the schema documents and the reporting file XML.

| File Cross Reference to Schema | | |
|---|------------------------------------|--|
| File Name | Schema File Name | Definition |
| Payroll Contribution File | PayrollRetirementV1.xsd | Schema for XML file containing Employer Payroll Contribution Records |
| Payroll Response File | PayrollReportResponseV1.xsd | Schema for XML file containing Status/Response to Employer Payroll Contribution File processing (FTP only) |
| Health Enrollment File/Retirement Enrollment file | RetirementHealthTransactionsV1.xsd | Schemas for XML file containing Health Enrollments or Retirement Enrollments (separate files) |
| Enrollment Response File | RetirementHealthResponseV1.xsd | Schema for XML file containing Status/Response to Health/Retirement Enrollment file processing |
| All | CommonUtilitiesV1.xsd | Schema defining permissible data element formats, conditions, content and error codes for common data elements |
| All | SoapEnvelope.xsd | Schema defining attributes of XML files |

Table 3.4

3.6. Payroll File Hierarchy in Graphical Format

The Payroll File has a relatively complex hierarchy. The graphical representation is a model of the file to help familiarize the technical staff with the structure and data relationships within the file without having to refer to the schema itself.

Each level in the hierarchy and each data element within each level are shown. Data Elements and branches shown in solid lines are required in the file. The data elements and branches shown with dotted lines are optional or conditional. The structures within each level indicate the data model relationships (zero- or one-to-many) of each level and each data element.

The graphical document showing the payroll file hierarchy is split into separate files for readability. The names of the files are as follows:

- PayrollRetirementV1_Page_1.mdi
- PayrollRetirementV1_Page_2.mdi
- PayrollRetirementV1_Page_3.mdi

Files with the extension .mdi are Microsoft Document Image files. We have also included the same files in PDF format. Those files have a .pdf extension.

The file, PayrollRetirementV1_Page_1.mdi, details the data elements in the Payroll File Header and Program Info levels of the hierarchy. Towards the bottom of that diagram, you will see a box titled “Participant”. The detail of the branching to that level of the hierarchy is shown in the document, PayrollRetirementV1_Page_2.mdi.

The Participant branch of the hierarchy is shown in the file PayrollREtirementV1_Page_2.mdi. It details the data elements and relationships at the Participant Info, Contribution Record and Record Detail levels of the hierarchy. In the center of this page, you will see a box titled, “Payroll”. The details of this branch are continued in the file, PayrollRetirementV1_Page_3.mdi.

The Payroll branch of the hierarchy, shown in the file, PayrollRetirementV1_Page_3.mdi, is the remaining data elements in the Record Detail level of the hierarchy.

These pages are best viewed when printed on 11x17 formats.

3.7. Sample XML

The Sample XML files are provided so that the technical staff has an example of what the resulting XML should look like. Included is a sample of the payroll file and an enrollment file. The file names are SamplePayroll.xml and SampleEnrollment.xml respectively.

A single sample for enrollment has been provided since the structure of the health enrollment and retirement enrollment files are the same.

The SampleHealthEnrollment.xml was not ready in time for the version 5 release of the Technical Toolkit and will be made available as soon as it is finalized.

3.8. File Transmission Requirements

For Employers reporting to CalPERS using XML files, we have included a document detailing the file transmission requirements with respect to encrypting/decrypting files submitted/retrieved using FTP, a description of the schema files (XSD) and how they relate to the structure of the files transmitted.

3.8.1 FTP

The files transmitted to my|CalPERS contain sensitive information and when using FTP, these files must be encrypted. SFTP will be used to transmit the encrypted file.

Response files delivered as acknowledgements of FTP file processing will be in XML format and encrypted.

Each Employer will have a logon and password into a specific directory structure for placing their inbound files and retrieving their outbound files.

Employers will use CalPERS public key to encrypt their files and will use their own private key to “sign” the file. Once CalPERS receives the file, we will use the Employers Public Key to verify the signature and use CalPERS private key to decrypt the file.

Once testing of the file transmission process begins, CalPERS will assign technical resources to validate the test files submitted and provide guidance to Employers for troubleshooting.

Employers will need to have completed training so that they are familiar with the test system and steps to log on, review data, and use the staging area to correct errors and submit records for reprocessing within the my|CalPERS system and by submitting a new or adjustment file.

A flow of the FTP transmission process is shown in [Appendix 5.2](#).

3.8.2 File Upload

my|CalPERS is accessed via secure HTTP (HTTPS), so file encryption is not required when submitting files using File Upload.

Employers will complete training so that they are familiar with the test system and steps to log on, upload a file, review data, and use the staging area to correct errors and submit records for reprocessing.

Once testing of the file upload process begins, CalPERS will assign technical resources to validate the test files submitted and provide guidance to Employers for troubleshooting.

A process flow of the File Upload process is shown in [Appendix 5.1](#).

3.9. CalPERS ID File Exchange for Employers

Test CalPERS IDs will be provided to Employers to utilize in testing the XML file interface and for training purposes. The production CalPERS IDs will be provided prior to go-live so the Employer has time to update their systems in time for interim payroll reporting.

A unique CalPERS ID will be created for each Employer to identify the organization. Each Employee of that organization will have a Participant ID. All Dependents of these Employees will have unique CalPERS IDs. These unique CalPERS IDs will be provided in a CSV file downloaded from ACES.

This document specifies each data element that will be included in the CalPERS ID download file. The definition of each element and its beginning and ending position in the file will be identified.

4. TECHNICAL SUPPORT

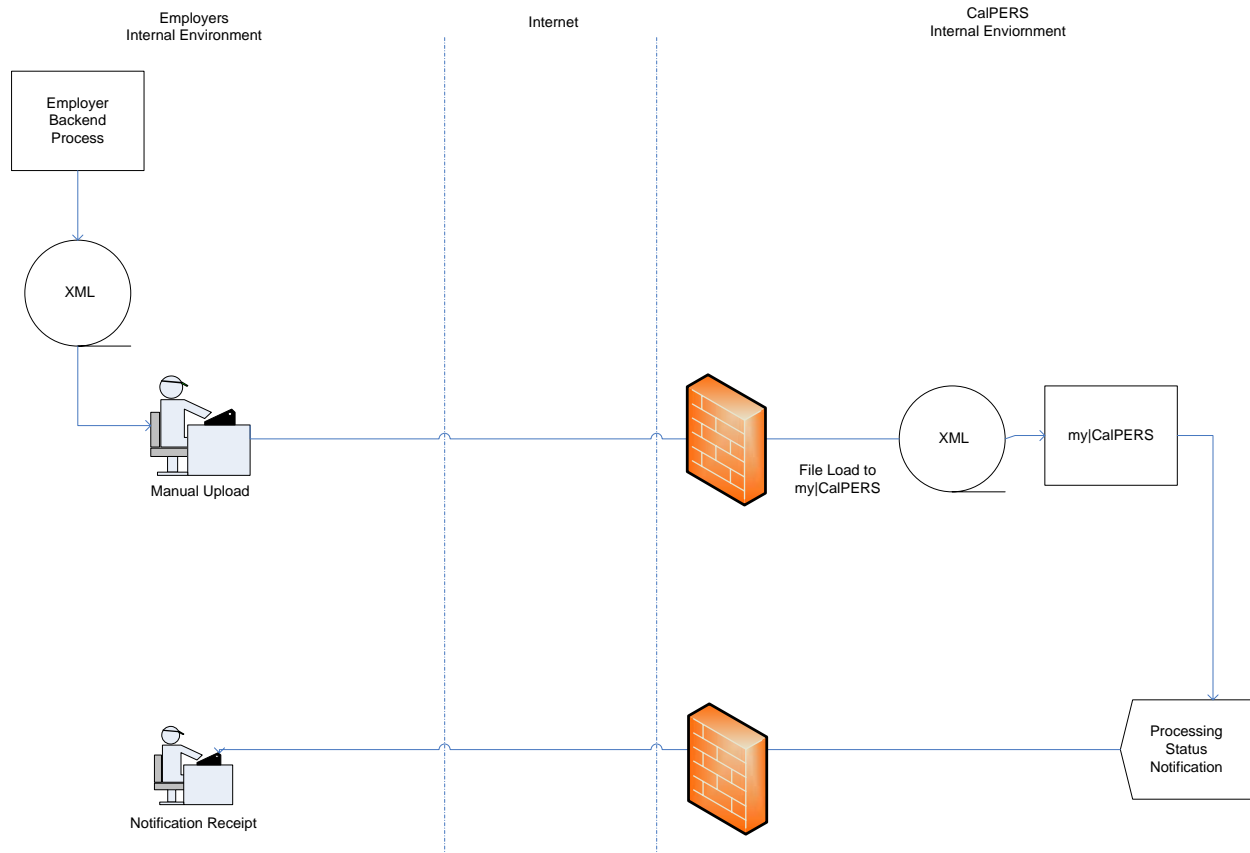
CalPERS will provide test environments so that Employers can validate their file structure, conformance to the schema definitions and validate that data contained in the file meets the business rules requirements of the new system.

During the testing process, CalPERS will have Technical Support available to assist you with testing issues and facilitating the test process. More information on the testing schedule and how to get support during testing will become available before the test phase actually starts.

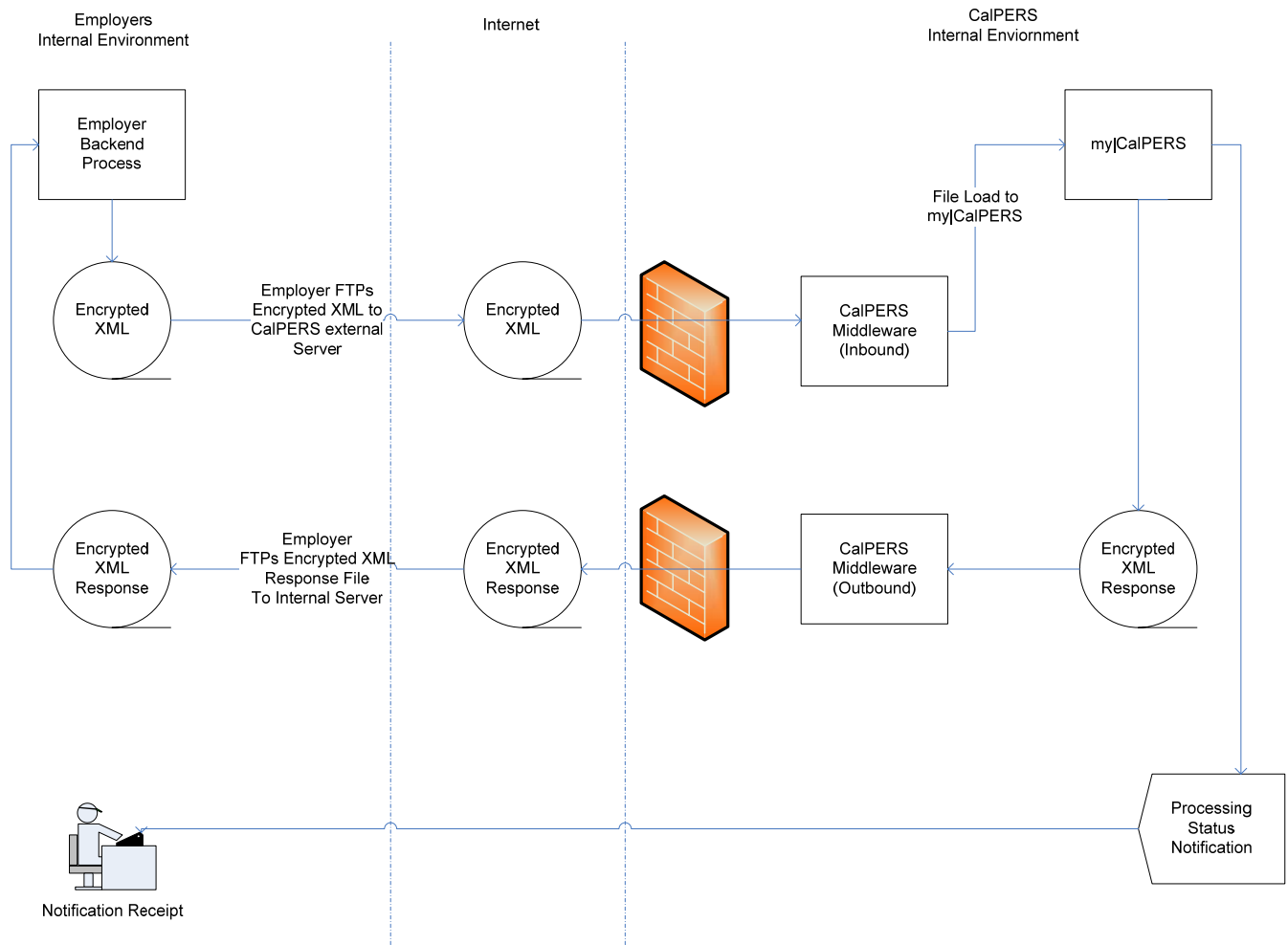
There are many resources available online to help developers with understanding XML and XML Development Tools, Schemas and related topics. A list of Web pages developers may find useful is included in the document, [Tools Available on the Internet](#), in the PERT area of CalPERS On-Line.

5. APPENDICES

5.1. File Upload Overview



5.2. FTP Overview



This graphic demonstrates how the Soap Envelope and Common Utilities Schemas relate to the XML file created for Health or Retirement Enrollment. A similar relationship exists between these two schemas and the Payroll File Schema and XML.

